

Ultrathin tabular grain emulsions with dopants at selected locations

Patent Number: ☐ EP0699949, B1

Publication date: 1996-03-06

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Requested Patent: ☒ JP8101472

Application Number: EP19950420238 19950821

Priority Number (s): US19940297430 19940826; US19940296562 19940826; US19940297195 19940826; US19940359251 19941219; US19950441132 19950515

IPC Classification: G03C1/005 ; G03C1/08

EC Classification: G03C1/005I, G03C1/08

Equivalents: DE69517373D, DE69517373T

Abstract

A chemically and spectrally sensitized ultra-thin tabular grain emulsion is disclosed including tabular grains (a) having $\approx 111\mu$ major faces, (b) containing greater than 70 mole percent bromide, based on silver, (c) accounting for greater than 90 percent of total grain projected area, (d) exhibiting an average equivalent circular diameter of at least 0.7 μ m, and (e) exhibiting an average thickness of less than 0.07 μ m. Improved sensitivity is observed when the surface chemical sensitization sites include silver halide protrusions of a face centered cubic crystal lattice structure forming epitaxial junctions with the tabular grains and having a higher overall solubility than at least that portion of the tabular grains forming epitaxial junctions with the protrusions and a sensitivity enhancing combination of dopants are contained in the silver halide grains including a first sensitivity enhancing dopant capable of providing shallow electron trapping sites and a second sensitivity enhancing selenium dopant. To further enhance sensitivity, one of the sensitivity enhancing dopants is restricted to the tabular grains while the other is restricted to the silver halide epitaxy.

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